

REMARKS

Claims 1-7, 9, 10, 15, 16, 19, 20, 22, 24-30, 32, 33, 38, 39, 42, 43, 45, 47-53, 55, 56, 60-62, 65, 66, 68 and 100-117 are pending in the application, are rejected and are at issue.

The applicants have amended independent claims 1, 24 and 47 in corresponding ways:

(i) to specify that descriptor values for each of the segments of the input video sequence are derived by an automatic signal analysis process (claims 8, 31 and 54 which previously claimed this feature are now withdrawn);

(ii) to specify that the order of the selected segments of the input video signal is permuted in the sequencing order relative to their order in the original sequence. This amendment is intended only as clarification of wording used in the previous version of these claims: "the new sequence being different from the sequence of the segments in the input video signal"; and

(iii) the term "selected order" is replaced by "sequencing order" in the last line of each claim, for linguistic consistency.

Consequent amendments for consistency of technology have been made to claims 7, 9, 10, 30, 32, 33, 53, 55, 56, 103, 109 and 115. The last three of these claims have also been amended to indicate that it is only the "first descriptor values" which are obtained automatically; the "second descriptor values" are not necessarily obtained automatically (see specific description at page 19 (especially the fourth paragraph), and Figs. 4(a) and 4(b)).

Rejection under 35 USC 102.

Independent claims 1, 24, 47, 105, 111 and 117 (as well as various claims dependent on these independent claims) have been rejected under 35 USC 102(e) as anticipated by U.S. 6,067,401 (Abecassis). The applicants have by way of this response amended claims 1, 24 and 47 to more clearly distinguish over this prior art. However, no amendment is required to other independent claims.

The Abecassis system concerns a “movie” (i.e. a film having a definite order of scenes; such a movie is often referred to in this industry as a “linear production”), and relates to how the movie can be censored, according to the wishes of a user. Before the movie is supplied to a user, a professional film editor partitions the film manually into segments. He then manually gives each of the segments a numerical rating (“descriptor”) for various properties. There are various types of property which he can assign, such as level of “profanity” and “graphic violence” (see Fig. 2A and col. 8, line 29); subtler properties such as “character” (Fig. 2B); level of “inclusion” (Fig. 2C); and even MPAA ratings such as “PG” (Fig. 2D).

The movie is then supplied to the user on an optical disk with these ratings in place for each segment. For each of the properties for which there are descriptor values, the user selects levels which it is prepared to tolerate. When the movie is to be played, the user’s computer compares the levels selected by the user with the manually assigned descriptor values set by the programmer. When a segment of the movie is outside the range selected by the user, the computer replaces that segment with a segment of film from a different source having a level

of the parameter concerned within the range selected by the user.

For example, suppose that a section of the original movie includes footage having no “profanity”, then footage with some “profanity”, then footage with no “profanity”. The editor watches the section of the movie, and notices its properties. He divides the section of the movie three consecutive segments: A, B, C, such that segment B contains the profane footage, and segments A and C do not. The editor labels segments A and C as “profanity” level 0, and segment B as “profanity” level 4. That is, he assigns respective descriptor values to each of the segments.

If the user has indicated that he does not wish to view “profanity” above level 3, then, when the movie is played, his computer will play segment A without problems. When the computer comes to segment B it replaces it with other footage (say, footage “Z” from another source) having a “profanity” level not above 3. Then the computer plays segment C without problems. In other words, the footage displayed to the user is A, followed by Z, followed by C. Note that as of the filing date of Abecassis, and even as of the priority date of the present US patent application, it was not possible to assign segments with numerical ratings (descriptors) for properties such as “profanity” or “graphic violence” reliably by an automatic signal analysis (let alone properties such as “MPAA rating”). The fundamental purpose of Abecassis therefore absolutely implies that the analysis of segments is manual. There is no automatic “signal analysis” in the sense of the patent. Abecassis talks about “segment analysis” (e.g. at Col 8, L62), but referring to the diagrams shown (again Fig. 2A-D, including parameters such as MPAA

rating), this is clearly a very different concept. It is certainly not automatic signal analysis.

The examiner alleges on page 6 of the office action that “automatic signal analysis” is disclosed in Abecassis at “Fig. 9, col 23, lines 18-44”, but the applicant respectfully disagrees.

As for col. 23, lines 18-44, there is no reference to automatic signal analysis. Instead, in the process described there, the descriptor values for various segments of the program are pre-known (“previously identified in a program’s segment map”, col 23, line 32). A “program’s segment map” (as defined at col. 10, lines 14-17) is a list of the descriptor values (profanity etc.) for each segment of the program. Col. 23, lines 18-44 does not discuss the derivation of this map. They do mention that an editor can check that this rating is correct for a given viewer (see col. 23, line 33-35), but this process is manual (by “viewing” the segments again, line 33). It is true that the term “automatically” is used several time in this passage, but this always refers to automatically comparing pre-calculated descriptor values with selected criteria, never to actually calculating the descriptor values.

Similarly, Fig. 9 shows a “process of previewing flagged segments” (see col 7, line 24), during which there is a comparison between preferences selected by a user and descriptors stored in a “program’s segment map” (see col 24, lines 12-14). but the “program’s segment map” is not derived in Fig. 9, but “read” (col 22, lines 2 and 12) from where it had previously been stored. The (very limited) description in Abecassis of how the descriptor values

of program segment map were actually derived confirms that it is by “reviewing the contents of each segment” (col. 8, line 13) – i.e., manually.

In summary, Abecassis has the following properties:

- 1) It has no automatic partitioning of a movie into segments. Partitioning is done manually by an editor. Exactly how he does this is never described (mainly because Abecassis is really concerned with what the user’s computer does with the optical disk, not with how the data on the optical disk was produced).
- 2) It has no signal analysis of the segments to obtain descriptors (what computer in 1997 could have reliably recognized violent or profane footage?). Instead, the level of properties such as “profanity” is assigned manually by an editor.
- 3) In the final movie the order of segments is the same as in the original movie. A is always followed by C, even if an extra segment Z is inserted between them in place of B. Changing the order (so that C follows A) would make nonsense of the story of the movie.

(ii) The present invention

The present invention relates to techniques which are particularly useful in systems for automatic (or semi-automatic) editing of an input video signal. In one such system, an automatic signal analysis of an input video signal is performed to obtain descriptors of an input video signal, the descriptors are used to automatically cut the input video signal into segments, and then the order of the segments is changed automatically.

Note that altering the order of segments of an input video signal makes sense when the input video signal relates to certain sorts of footage, such as footage taken by a personal video camera, and showing scenes taken by holiday-makers over a number of weeks. It causes relatively little disruption, when this sort of footage is edited into a video production, whether the order of the segments is changed. This is because, unlike in Abecassis, the input video signal is not a linear production.

(a) Claims 1, 24, 47

Specifically, the present invention as defined by claims 1, 24 and 47, relates to a system in which a “sequencing rule” is used to determine a sequence in which to present segments of an input video signal. This sequence is different from that of original sequence. This definition of the invention clearly excludes Abecassis, because of feature (3) of Abecassis identified above. The difference is inventive over Abecassis, because it is not readily applicable to the linear productions with which Abecassis is concerned.

It appears that the examiner recognizes this difference between the present invention (as defined by claims 1, 24 and 47) and Abecassis. Although page 3 of the office action states that Abecassis shows “the new sequence being different”, the examiner has added the words “(non-sequential)” in brackets after this term. In other words, the novelty objection appears to rest on a concern about whether the previous claim wording is sufficiently clear. Accordingly, in

presently amended claims 1, 24 and 47 it is clearly stated that according to the sequencing order the order of the selected segments is permuted relative to their original order.

Additionally, claims 1, 24 and 47 are amended to specify that the descriptor values are obtained by an automatic signal analysis (i.e. to combine these claims with claims 8, 31 and 54 respectively). As described above, this is not disclosed in Abecassis, and is furthermore clearly inventive since the types of descriptors Abecassis has in mind (profanity etc) were not at the filing date of this application derivable automatically. Nor, in point of fact, is Abecassis much interested in the issue of deriving descriptors: his invention is about how to use pre-generated descriptors to censor movies. Thus, with this amendment, claims 1, 24 and 47 are clearly inventive over Abecassis.

(b) Claims 105, 111 and 117

Claims 105, 111 and 117, relate in more detail to obtaining descriptors for each of a plurality of segments of the input video signal. Specifically, claims 105, 111 and 117 relate to a system which does this by (i) deriving a “time-series descriptors” from an input video signal, (ii) from these descriptors deriving “segment boundaries”, and then (iii) using the time-series descriptors for each of the segments to produce to a single “segment descriptor” value for each segment.

The action attempts (starting at the bottom of page 4 of the office action) to find these feature in Abecassis, but the applicant respectfully observes that none are in fact present.

With regard to (i), note that the term “time-series descriptor” is a term of art, meaning a descriptor value which is defined at each of a series of “times” (i.e. locations) within a video signal. The “descriptors” shown in Fig. 2B, 230 (which the examiner refers to) are derived (as explained above) manually for defined respective segments of the image. In other words, a human user watches a segment and, for each of a number of parameters (such as “profanity”) derives one descriptor values for the segment as a whole. The descriptor values of Abecassis are thus not “time series” descriptors, but rather are each given a value for a corresponding segment (which may be of any duration). They correspond in fact (using the language of feature (iii) of claim 105) to the “segment descriptors having a single value for each respective segment”; that is, the output of feature (iii) of the claims. There are no “time-series descriptors” in Abecassis, as required by feature (i).

With regard to (ii), since in Abecassis the descriptors are assigned manually to respective segments, it obviously cannot be true that the descriptors are used to obtain the segments. There is no support in the passages cited by the examiner (Fig. 2B, 230; col. 8, lines 33-45) for the idea that segments are defined using the descriptors. Clearly, the segments are derived first, and descriptor values are then chosen manually for each segment.

With regard to (iii), Fig.2B shows what (in the terms of the claims) are “segment descriptors having a single value for each segment”, but there is no disclosure whatever in Abecassis that these descriptors are obtained from other descriptors, let alone from time-series descriptors (as required by feature (iii) of the claims).

Accordingly, all of claims 105, 111 and 117 contain features which are not taught or

suggested by Abecassis, and these claims must consequently be regarded as inventive over that citation.

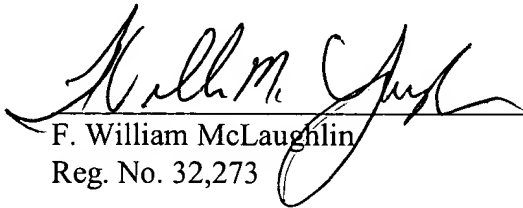
For these reasons, none of the claims are anticipated by Abecassis. Moreover, since there is no suggestion of the claimed invention, any obviousness rejection would also be improper.

(c) Other claims subject to objection

Since all the other claims subject to objection incorporate the features of one of the independent claims discussed above, the examiner's objections to these claims as anticipated or obvious are respectfully traversed.

Respectfully submitted,

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